PATENT SPECIFICATION

DRAWINGS ATTACHED

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827,626

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COMPLETE SPECIFICATION

Improvements relating to Gas Control Cocks or Taps

We, CANNON INDUSTRIES LIMITED, a British Company, of Deepfields, near Bilston, Staffordshire, do hereby declare this invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to gas control cocks or taps intended for use in apparatus in which a gas rail is used to supply a plurality of individually controlled burners, arranged, for example, along the upper part or hot plate of a gas cooker, or groups of radiants of a gas fired heater.

In accordance with the invention a gas control tap comprises a hollow cock body accommodating a taper plug which is passed into the hollow gas rail through a relatively large bore in one wall and bridges the interior space of the rail where it is surrounded by gas, and its outlet end is passed through a smaller bore in the opposite wall where an annular face of a sealing shoulder on the exterior of the body is urged to make a compression seal against an inner face on the wall surrounding the smaller opening beyond which the body has an outlet to connect with a gas burner nozzle or a tube connected to a gas nozzle of a burner.

The invention equally consists in a gas tap controlling the supply of gas to a burner or burners from a hollow gas rail having relatively larger and smaller openings in opposite walls and a joint face bordering the inner end of the smaller opening against which an external sealing shoulder on a hollow body of the tap, inserted through the larger opening, is urged to make a gas-tight seal the hollow body of the tap, where it bridges the interior of the gas rail, being surrounded by gas and having inlet ports leading to a seating within the hollow body for a rotatable taper plug which has ports able to be brought into register with the inlet ports for admitting gas to an outlet in the end of the body extending into the smaller opening.

In one form of the invention the cock body has an external shoulder, flange or pressure surface around its larger end which passes into or through the larger bore in the wall of the rail and is adapted to receive pressure, for making the above mentioned seal, from a sleeve nut screwing into an internal screw thread in the wall of the bore and surrounding an extension of the body through which the handle of the taper cock plug projects for manipulation.

As the body within the gas rail is surrounded by gas, it may be provided with two inlet ports leading to its machined interior where the hollow taper cock plug is rotatably fitted. The plug is also provided with two ports leading to its interior, each of which plug ports can be brought into register with one of the body inlet ports by rotary movement of the plug through an angle of 90° in order to supply gas through the outlet end of the cock body.

The taper plug is preferably urged by a spring into its machined bore in the body and the other end of the spring can be arranged to bear against a niting washer keyed on the plug stem. The washer is suitably equipped to determine the range of movement of the taper plug of the cock. For example it may have a radial arm working in an arcuate slot formed in the body extension beyond the sleeve nut before mentioned. The washer is supported externally by a ring nut screwed on the body extension.

With this improved construction the cock body and plug can be of smaller size for passing a predetermined quantity of gas in a given time than a cock with a single port in the body and plug, and considerable economy of metal can be effected while the axial and circumferential seals between the

body and both ports will be maintained in accordance with requirements.

A convenient cross section for the hollow gas rail is oblong rectangular but may be circular or oval. In any case the bores for receiving the tap body are formed in line through two opposed walls. The tap body can be conveniently machined direct from bar metal, with its two external flanges providing respectively the front jointing face near the smaller outlet end and a rear pressure face at the rear of the larger flange to take the thrust of the sleeve nut. The body is conveniently bored right through forming the larger internal diameter within what has been hereinbefore referred to as the cylindrical extension, then a truncated conical part for receiving the taper plug and finally a cylindrical bore through the small outlet end of the body. In the central part of the bored body between the external flanges, the inlet ports will be drilled for leading gas to the interior where the two ports of the hollow cock plug can be brought to register with them when assembled in the body.

The spring for retaining the cock plug in proper relation with the conical bore of the body is preferably a helical compression spring around the stem projecting from the plug. This stem can conveniently be provided with a flat or flats along it on which a niting washer with a complementarily shaped hole is arranged to move with the rotary movement of the plug and define its limits.

An embodiment of the invention will now be described by way of example, with reference to the accompanying drawings in which:—

Figure 1 is a front elevation of part of a typical gas rail for example for the hot-plate of a gas cooker, and fitted with control taps according to the invention.

Figure 2 is an end elevation on an enlarged scale partly in cross-section of the gas rail and one of the taps shown in Figure 1.

Figure 3 is a front elevation of the tap shown in Figure 2.

Figures 4 and 5 are sectional views on lines 4—4 and 5—5 respectively of Figure 2.

Figure 6 is a perspective view of the body of the tap of Figure 2.

The gas rail 7 is hollow and extends in the usual way across the front of a cooker hotplate. Gas is supplied to the interior of the gas rail by supply pipe 8 and is distributed by the gas rail to the various burners (not shown) of the hotplate under the control of spaced taps 10. Each tap 10 has an outlet 9 arranged to connect with a gas burner nozzle or a tube connected to a gas nozzle of a burner.

At each position at which a tap 10 is to be fitted the gas rail is provided with co-axial openings 11, 12. The larger opening 11 is in the front wall and internally screw-threaded; the smaller opening 12 in the rear wall and plain. Each tap has a body 13 which has stepped diameters or flanges forming annular shoulders 14 and 15. The body 13 is passed into the larger opening 11 and bridges the interior space 16 of the rail where it is surrounded by gas. The end of the body in which the outlet 9 is provided enters the smaller opening 12 in the opposite wall where the annular shoulder 14 engages a soft metal sealing ring 18, for example, of aluminium or copper, in a rebate on the inner face of the wall surrounding the opening 12. The body is urged against the sealing ring 18 to compress it against the face of the rebate and make a gas tight joint by a sleeve nut 19 which engages the larger screw-threaded opening 11 and has an internal annular shoulder which bears on the annular shoulder 15 of the body. The body has an externally screw-threaded extension 20 through the sleeve nut 19 and is conveniently bored right through forming a larger internal diameter within the extension 20, then a truncated conical part for receiving a taper plug 21 and finally the outlet 9.

The body 13 is provided, where it is surrounded by gas within the gas rail, with two diametrically opposed inlet ports 22 leading to the tapering portion of its through bore. The plug 21 is also provided with two ports 23 leading to an axial recess 24 open to the outlet 9. Each port 23 can be aligned with an inlet port 22 by rotary movement of the plug through an angle of 90° in order to supply gas through the outlet end of the cock body.

The taper plug 21 has a stem 25 around which is a spring 26 which urges the plug axially into the taper bore of the body and bears at its outer end on a niting washer 27 provided with a non-circular opening for keying it to the stem 25 of the taper plug.

The niting washer 27 also serves as a coupling member permitting relative axial sliding movement between the stem 25 and a hollow spindle 28 on which the operating knob for the tap is mounted or to which it is connected. The hollow spindle is rotatable in an internally-flanged nut 29 which is screwed on the extension 20. A shoulder formed by an enlarged inner end 31 of the spindle 28 is urged against the internal flange 30 of the nut 29 by the spring 26. The enlarged inner end 31 is hollow and has diametrically opposed slots 32 (Figure 5) in its cylindrical walls into which radial lugs 33, 34 of the niting washer extend to couple rotatively the spindle 28 and stem 25. The lug 33 is larger than the lug 34 and when the tap is "off" projects radially beyond the spindle 28 into the entrance opening 38 of an arcuate niting slot 35 (to be seen most clearly in Figures 5 and 6) in the body. Inside the hollow spindle 28 an adjusting

screw 36 is fitted, engaging an internally screw-threaded constriction 37 in the bore of the spindle. To turn the tap "on" the spindle 28 is first pushed in by the control knob against the action of the spring so that the lug 33 enters the arcuate portion of the niting slot 35 and then turned. The adjusting screw is set to abut against the end of the stem 25 as a stop to inward movement of the spindle 28.

WHAT WE CLAIM IS:—

1. In a hollow gas rail used to supply a plurality of individually controlled burners a gas control tap comprising a hollow cock body accommodating a taper plug which is passed into the hollow gas rail through a relatively large bore in one wall and bridges the interior space of the rail where it is surrounded by gas, and its outlet end is passed through a smaller bore in the opposite wall where an annular face of a sealing shoulder on the exterior of the body is urged to make a compression seal against an inner face on the wall surrounding the smaller opening beyond which the body has an outlet to connect with a gas burner nozzle or a tube connected to a gas nozzle of a burner.

2. A gas tap controlling the supply of gas to a burner or burners from a hollow gas rail having relatively larger and smaller openings in opposite walls and a joint face bordering the inner end of the smaller opening against which an external sealing shoulder on a hollow body of the tap inserted through the larger opening is urged to make a gas-tight seal, the hollow body of the tap where it bridges the interior of the gas rail being surrounded by gas and having inlet ports leading to a seating within the hollow body for a rotatable taper plug which has ports able to be brought into register with the inlet ports for admitting gas to an outlet in the end of the body extending into the smaller opening.

3. A gas tap according to Claim 1 or Claim 2 wherein the body has a further shoulder for engagement by a sleeve nut engaging an internal screw thread provided in the larger opening and tightenable to urge the sealing shoulder towards the face surrounding the smaller opening.

4. A gas tap according to any of the preceding claims wherein the body has at least two radial inlet ports where the body is surrounded by gas within the gas rail, and the rotatable plug a similar number of radial ports leading to the outlet and disposed in corresponding angular relation to the inlet ports.

5. A gas tap according to any preceding claim wherein the body has a tubular extension through the larger opening and the taper plug has a stem projecting through the tubular extension.

6. A gas tap according to Claim 5 wherein the tubular extension has niting stops engageable by a niting washer keyed to the stem.

7. A gas tap according to Claim 5 or Claim 6 wherein the taper plug is urged axially against its seating by a compression spring surrounding the stem and within the tubular extension and retained in compression by means secured to the tubular extension.

8. A gas tap according to Claims 6 and 7 wherein the niting washer also serves as an axially slidable coupling between the stem and a hollow spindle rotatably mounted on the tubular extension and on which the control knob of the tap is mounted or to which it is connected.

9. In a gas rail used to supply a plurality of individually controlled burners, a gas control tap substantially as described herein with reference to and as illustrated by the accompanying drawings.

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PROVISIONAL SPECIFICATION

Improvements relating to Gas Control Cocks or Taps

We, CANNON INDUSTRIES LIMITED, a British Company, of Deepfields, near Bilston, Staffordshire, do hereby declare this invention to be described in the following statement:—

This invention relates to gas control cocks or taps, more especially to those intended for use in apparatus in which a gas rail is used to supply a plurality of individually controlled burners, arranged, for example, along the upper part or hot plate of a gas cooker, or groups of radiants of a gas fired heater.

In accordance with the invention a hollow cock body accommodating a taper plug is passed into a hollow gas rail through a relatively large bore in one wall, and bridges the interior space of the rail where it is surrounded by gas, and its outlet end is passed through a smaller bore in the opposite wall, where an annular face of a sealing flange on the exterior of the body is urged to make a compression seal against a machined face on the wall surrounding the inner end of the smaller bore beyond which the body has an outlet to connect with a gas burner nozzle, or a tube connected to a gas nozzle of a burner.

The cock body has an external flange or pressure surface around its larger end which passes into or through the larger bore in the

wall of the rail and is adapted to receive pressure for making the above mentioned seal, from a sleeve nut screwing into an external screw thread in the wall of the bore and surrounding an extension of the body through which the handle of the taper cock plug projects for manipulation.

As the body within the gas rail is surrounded by gas, it can be provided with two inlet ports leading to its machined interior where the hollow taper cock plug is rotatably fitted. The plug is also provided with two ports leading to its interior, each of which plug ports can be brought into register with one of the body inlet ports by rotary movement of the plug through an angle of 90° in order to supply gas through the outlet end of the cock body.

The taper cock plug is preferably urged by a spring into its machined bore in the body and the other end of the spring can be arranged to bear against a niting washer keyed on the plug stem. The washer is suitably equipped to determine the range of movement of the taper plug of the cock. For example it may have a radial arm working in an arcuate slot formed in the body extension beyond the sleeve nut before mentioned. The washer is supported externally by a ring nut screwed on the body extension.

With this improved construction the cock body and plug can be of smaller size for passing a predetermined quantity of gas in a given time than a cock with a single port in the body and plug, and considerable economy of metal can be effected while the axial and circumferential seals between the body and both ports will be maintained in accordance with requirements.

A convenient cross section for the hollow gas rail is oblong rectangular but may be circular or oval. In any case the bores for receiving the tap body are formed in line through two opposed walls. The tap body can be conveniently machined direct from bar metal, with its two external flanges providing respectively the front jointing face near the smaller outlet end and a rear pressure face at the rear of the larger flange to take the thrust of the sleeve nut. The body is conveniently bored right through forming the larger internal diameter within what has been hereinbefore referred to as the cylindrical extension, then a truncated conical part for receiving the taper plug and finally a cylindrical bore through the small outlet end of the body. In the central part of the bored body between the external flanges, the inlet ports will be drilled for leading gas to the interior where the two ports of the hollow cock plug can be brought to register with them when assembled in the body.

The spring for retaining the cock plug in proper relation with the conical bore of the body is preferably a helical compression spring around the stem projecting from the plug. This stem can conveniently be provided with a flat along it on which a niting washer with a complementarily shaped hole is arranged to move with the rotary movement of the plug and define its limits.

The compression seal between the machined face of the smaller flange of the body and the machined internal face of the wall of the gas rail is preferably a soft metal ring say of aluminium or copper.

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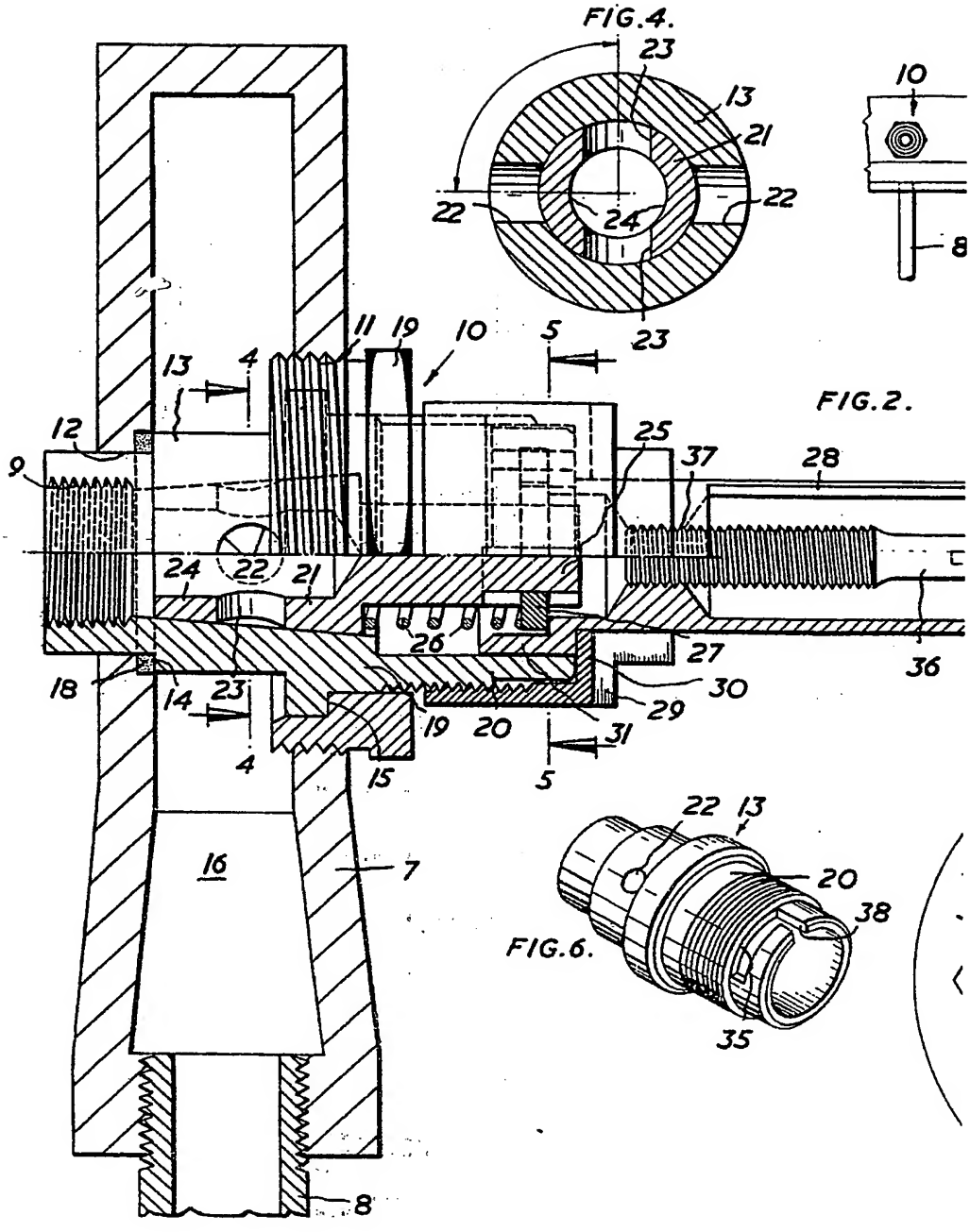
FIG.4.
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FIG.2.
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FIG.6.
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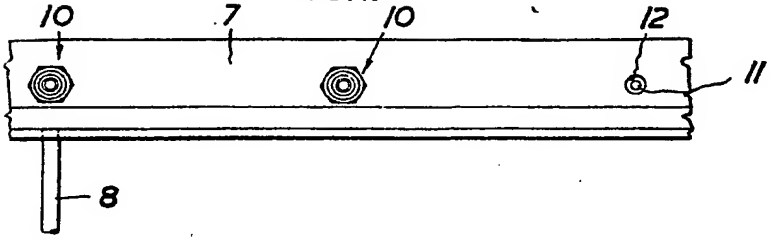
827,626 COMPLETE SPECIFICATION

1 SHEET

This drawing is a reproduction of the Original on a reduced scale.

FIG. 1.



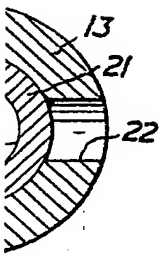


FIG. 2.

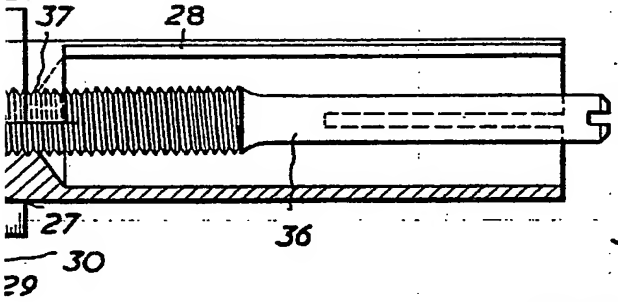
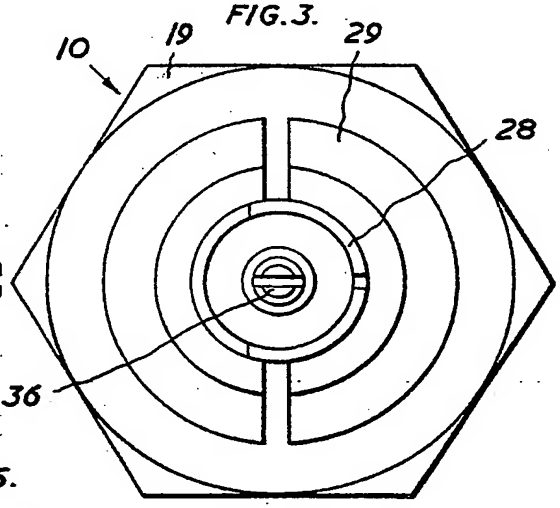


FIG. 3.



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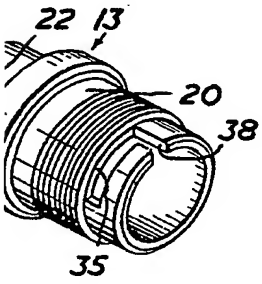

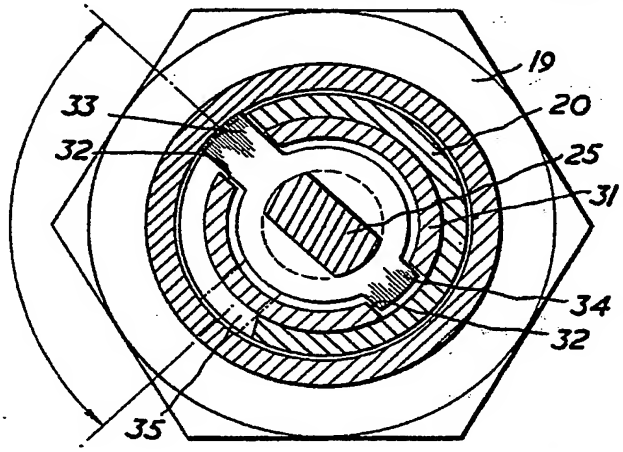

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